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| <i>o Ceti</i> | SUN       | ELEMENT | $\Delta$ | GROUP    |
|---------------|-----------|---------|----------|----------|
| 4308.71       | 4308.08   | Fe      | 0.63     | <i>b</i> |
| 4341.16       | 4340.63   | H       | 0.53     |          |
| 4352.86       | (4352.08) | Mg      | 0.78)    |          |
| 4373.22       |           |         |          |          |
| 4376.66       | 4376.11   | Fe      | 0.55     | <i>a</i> |
| 4427.98       | 4427.48   | Fe      | 0.50     | <i>a</i> |
| 4448.86       |           |         |          |          |
| 4462.46       | 4461.82   | Fe      | 0.64     | <i>a</i> |
| 4571.79       | 4571.27   | Mg      | 0.52     |          |

The last column gives the classification of the iron lines according to the groups used by Gale and Adams. Groups *a* and *b* on this system denote low temperature lines and *c* and *d* high temperature lines. It is evident that the bright lines appearing in the spectrum of *o Ceti* near minimum of light are lines which are strengthened at low temperatures. The iron line at  $\lambda$  4233 is an enhanced line, but the presence of manganese makes the identification uncertain.

The bright line in the stellar spectrum at  $\lambda$  4571, due to magnesium, has been shown by King to be very greatly strengthened at low temperatures. This line is the most intense of any on the photograph with the exception of those due to hydrogen. The identity of the line at  $\lambda$  4352 is uncertain, a low temperature line of iron at  $\lambda$  4352.9 perhaps contributing to the stellar line.

The conclusion seems to be justified that the radiating gases in the case of *o Ceti* undergo a reduction of temperature as the star becomes fainter, which leads to the appearance of the lines which are strengthened at low temperatures. It is probable that this conclusion may be applied to the entire class of long-period variables of type Md to which this star belongs.

W. S. ADAMS.

A. H. JOY.

#### NOTE ON THE REVOLUTION PERIOD OF SIRIUS

The published values for the period of revolution of *Sirius* range from 48.84 years to 52.20 years.<sup>1</sup> The orbits computed by Peters (50.01 years) and by Auwers (49.42 years) were based upon the variable proper motion of the bright star, the others upon micrometer measures of the relative motion of the faint companion. The latest of these orbits is that by Lohse (1908, period 49.32 years), who had at his disposal an observed arc which fell short of one

<sup>1</sup>Two obviously erroneous values are excluded.

complete revolution by more than  $25^\circ$ . At present an arc exceeding one revolution by  $14^\circ$  is available, and the companion has nearly reached its maximum elongation. These conditions favor a more accurate determination of the orbit elements and especially of the period, and a new discussion has therefore been undertaken.

The present note relates to the period of revolution which is indicated by the preliminary comparison of the mean position angles observed in the years 1862 to 1868 with those observed in the years 1912 to 1918. These annual means were formed after the measures of the individual observers had been freed, as far as possible, from systematic errors of measure. The dates in the first column and the position angles in the following table are the direct results of observation; the dates in the third column have been obtained by reducing the observed dates to make the observed angles equal to those for the corresponding early dates. For example, the observations give 1912.05,  $84^\circ.8$ . To reduce the angle to  $84^\circ.7$ , a correction, computed from Lohse's elements, is applied to the date, making it 1912.09.

| DATE    | ANGLE        | DATE    | PERIOD  | WEIGHT |
|---------|--------------|---------|---------|--------|
| 1862.22 | $84^\circ.7$ | 1912.09 | 49.87y. | 6      |
| 1863.21 | $82^\circ.1$ | 1913.07 | 49.86   | 5      |
| 1864.20 | $78^\circ.5$ | 1914.50 | 50.30   | 5      |
| 1865.21 | $77^\circ.2$ | 1915.23 | 50.02   | 6      |
| 1866.22 | $75^\circ.3$ | 1915.93 | 49.71   | 8      |
| 1867.19 | $73^\circ.4$ | 1917.19 | 50.00   | 8      |
| 1868.20 | $70^\circ.3$ | 1918.34 | 50.14   | 9      |

Weighted mean period.....49.98 years

Neglecting weights, the simple mean is 49.99 years, and the individual comparisons are accordant in indicating an increase to the periods adopted by Auwers, and, later, by Lohse. A least squares solution for the definitive correction to the period and other orbit elements is now in progress.

May, 1918.

ROBERT G. AITKEN.

#### THE CROCKER ECLIPSE EXPEDITION, 1918

Director Campbell recently spent a day at Goldendale, Washington, selecting the observing station for the total solar eclipse on June 8th, just outside the western edge of the town, and making preliminary arrangements.

The personnel of the expedition consists of Director and Mrs. W. W. Campbell, Astronomer H. D. Curtis, Associate Astronomer